

WHAT IS CLAIMED IS:

1. A photoelectric switch device for detecting a presence or an absence of an object in a specified field of detection, which has at least a light projecting means including a light emitting means and an optical means for projecting light forward to the field of detection, light receiving means including photoelectric element and optical means for receiving light from the field of detection and generating an electric signal of a level representing an amount of light incident thereupon and processing means for processing the electric signal from said photoelectric means, for making a determination of the presence or the absence of the object in the field of detection on the basis of a comparison of the level of the electric signal from said photoelectric means with a specified threshold and for providing an electric signal representing a result of the determination, all of said means being installed in a generally rectangular-parallelepiped box casing defined by a plurality of walls, said photoelectric switch device comprising:

a transparent window panel disposed in a rear wall of said generally rectangular-parallelepiped box casing;

a display board disposed behind said transparent window panel within said generally rectangular-parallelepiped box casing;

display means disposed on said display board and operatively connected to said processing means for providing a numerical display of the specified threshold of the electric signal from said photoelectric means;

adjusting switch means disposed on said display board and operatively connected to said processing means for adjusting said numerical display of the specified threshold

when operated;

manually operable switch means disposed on said rear wall for operating said adjusting switch;

a first circuit board provided with a power supply circuit printed thereon through which electric power is supplied to the photoelectric switch device and disposed in said generally rectangular-parallelepiped box casing behind said display board in close proximity to and in parallel with either one of opposite side walls of said generally rectangular-parallelepiped box; and

a second circuit board provided with an excitation circuit printed thereon and operationally connected to said processing means for exciting said light emitting means for emitting light and disposed behind said display board within said generally rectangular-parallelepiped box casing in close proximity to and in parallel with another one of said side walls of said generally rectangular-parallelepiped box.

2. A photoelectric switch device as defined in claim 1, further comprising holding and positioning means for holding and positioning said light projecting means and said light receiving means in a specified position relative to each other with respect to said front wall of said generally rectangular-parallelepiped box casing.

3. A photoelectric switch device as defined in claim 2, wherein said holding means is disposed between said first and second circuit boards.

4. A photoelectric switch device as defined in claim 1, further comprising switching means disposed on said rear wall for switching said numerical display of said display means to a numerical display of a level of the electric signal.

5. A photoelectric switch device as defined in claim 1, further comprising indication means disposed between said rear wall and a top wall of said generally rectangular-parallelepiped box casing connecting said front wall and said rear wall to each other and operatively connected to said processing means for indicating the result of the determination.

6. A photoelectric switch device as defined in claim 5, wherein said generally rectangular-parallelepiped box casing has a tapered rear top corner wall between said rear wall and said top wall and said indication means is disposed on said tapered rear top corner wall.

7. A photoelectric switch device as defined in claim 5, further comprising indicating means disposed between said rear wall and said top wall of said generally rectangular-parallelepiped box casing connecting said front wall and said rear wall to each other and operatively connected to said processing means for indicating stability of the result of the determination.

8. A photoelectric switch device as defined in claim 7, wherein said generally

rectangular-parallelepiped box casing has a tapered rear top corner wall between said rear wall and said top wall and said indication means for indicating stability of the result of the determination is disposed on said tapered rear top corner wall.

9. A photoelectric switch device as defined in claim 1, further comprising indicating means disposed on and projecting from a top wall of said generally rectangular-parallelepiped box casing and operatively connected to said processing means for indicating the result of the determination.

10. A photoelectric switch device as defined in claim 9, further comprising indicating means disposed on and projecting from said top wall of said generally rectangular-parallelepiped box casing and operatively connected to said processing means for indicating stability of the result of the determination.

11. A photoelectric switch device as defined in claim 1, further comprising a cable connected to said processing means and extending out from said generally rectangular-parallelepiped box casing between said rear wall and a bottom wall of said generally rectangular-parallelepiped box casing connecting said front and rear walls to each other for providing power to said power supply circuit and signals including an electric signal representing the result of the determination.